

The Effects of De-Training and Re-Training the Cardiovascular and Respiratory Systems on Female Collegiate Swimmers

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PURPOSE: To investigate the effects of a de-training (off-season) and re-training (in-season) period on the cardiovascular and respiratory systems in collegiate swimmers. Swimming is a unique sport that requires months of strict training to produce gains in performance. Unfortunately when the season ends, collegiate swimmers have nearly four months of off-season where the physiological gains they achieved during the season can be partially or completely lost if proper training does not take place. **METHODS:** The cardiovascular and respiratory systems were evaluated through the use of VO_2max treadmill testing and spirometry, focusing on maximal oxygen uptake (ml/kg/min) and three lung capacities (forced vital capacity, FVC; peak expiratory flow, PEF; forced expiratory volume in one second, FEV_1). Secondary variables evaluated included anthropometrics (body weight (kg) and BMI), as well as resting heart rate, maximal heart rate, maximal time, and maximal METs achieved during the VO_2max test. Six collegiately trained swimmers completed two trials separated by three months of re-training on campus as provided by the university coaching staff. Spirometry was measured before cardiovascular values during both pre-testing and post-testing. **RESULTS:** Mean body weight (kg) was found to be significantly lower from pre- to post-testing (pre 67.9 ± 7.26 vs. post 66.4 ± 6.86 ; $p=.011$) and all other variables were trending towards significance ($p > 0.05$) when comparing pre- to post- testing cardiovascular and respiratory fitness. **CONCLUSION:** It appears that the off-season for female collegiate swimmers causes reductions of in-season fitness levels; the coaching staff and athletes should focus on maintaining cardiorespiratory fitness during the off-season to improve their chances of achieving peak swim performance.